Maize-N: An Integrated Approach for N Rate Recommendation for Corn

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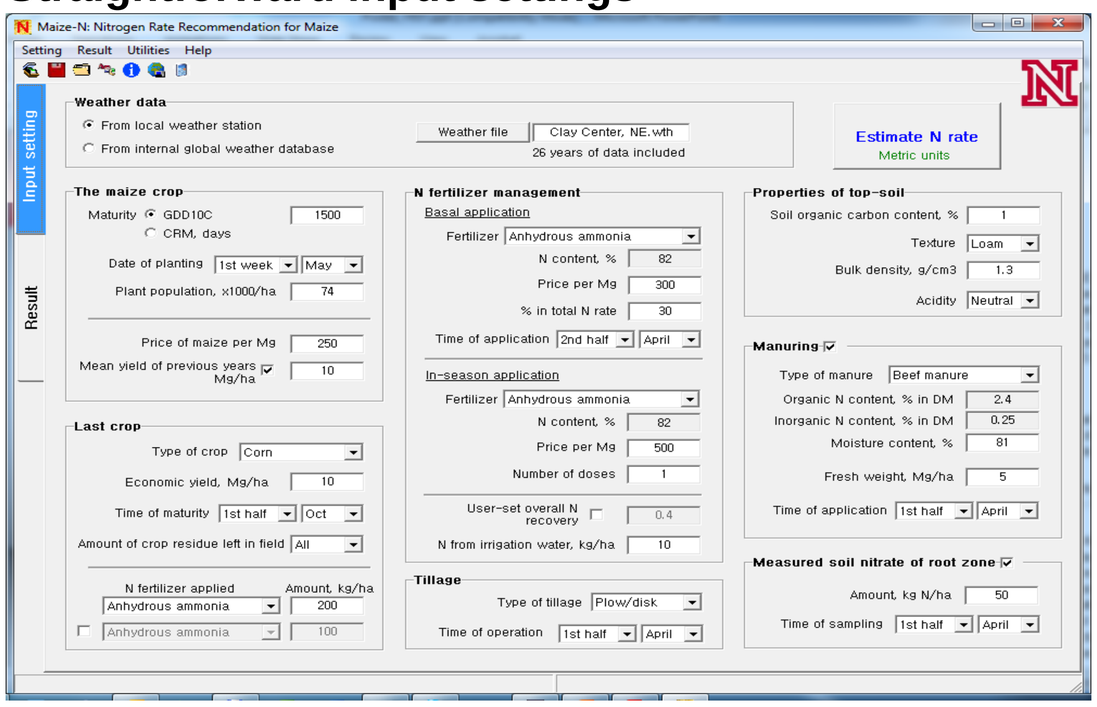
Abstract

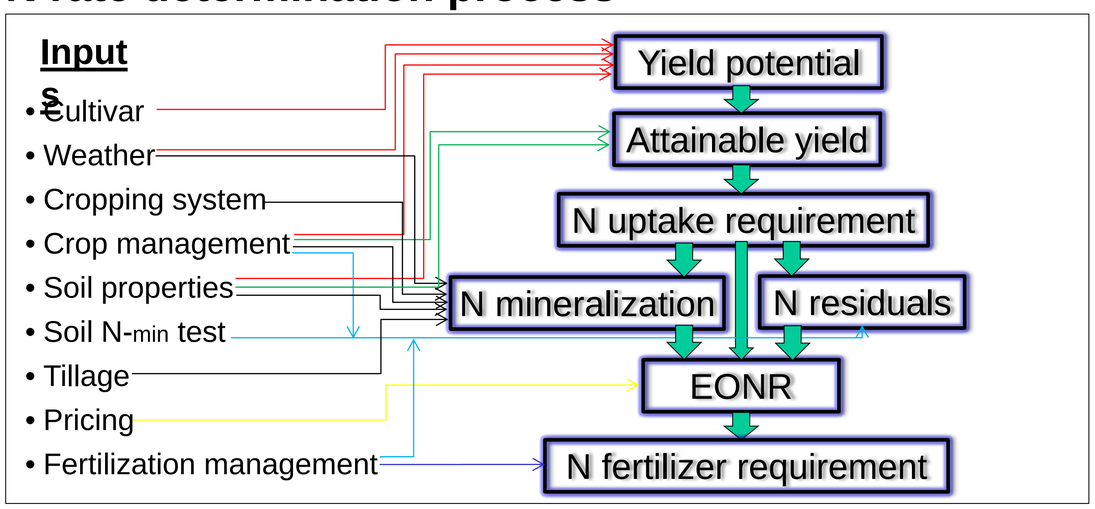
Maize-N model is a computer program that estimates field-specific, economically optimal N rate (EONR) for corn crop based on mechanistic and quantitative understandings of corn cropping system. It achieves the goal in a systematic manner: (1) simulate maize yield potential and year to year variation using long-term weather data and user-set management for hybrid maturity, planting date and plant population, (2) assess attainable yield either based on field-specific, past yield record or using generic estimation, (3) estimate N uptake requirement for the attainable yield, (4) simulate mineral N release from soil organic matter, crop residues (including roots) and manures, (5) estimate recovery efficiency of applied N fertilizers, and (6) assess EONR of fertilizer maize based on pricing info of corn grain and fertilizer. The model has been tested and validated in US Corn Belt (Setiyono, et al, 2011), and is being tested globally.

The model is available at: **http://hybridmaize.unl.edu/maizen.shtml**

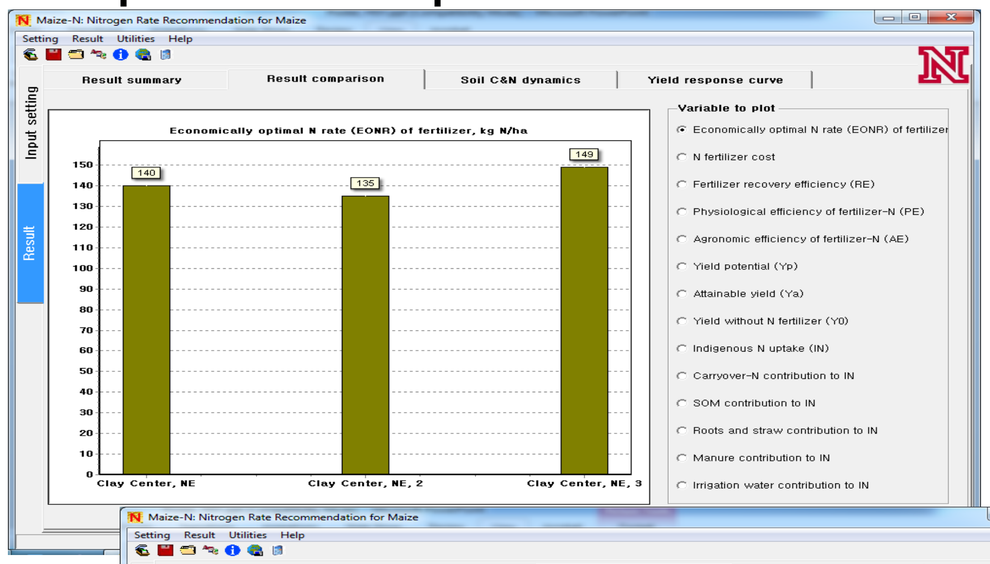
Straightforward input settings

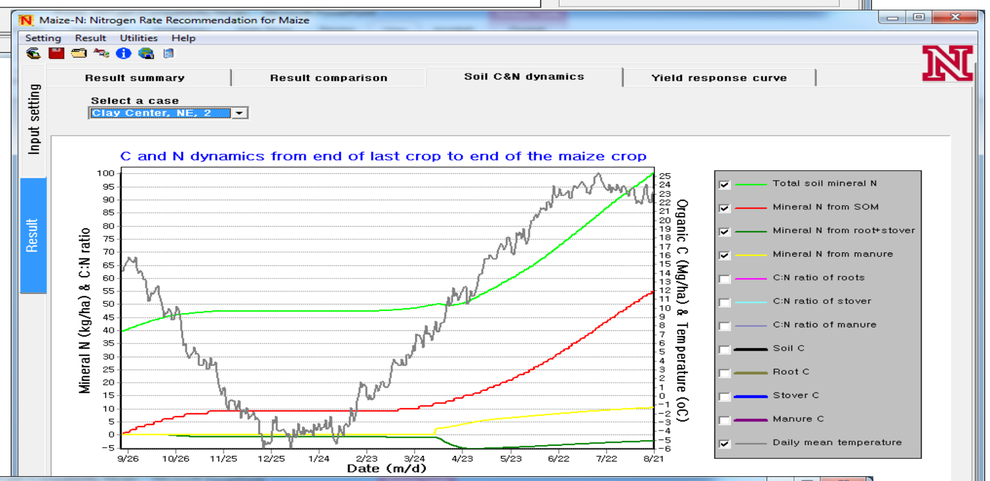


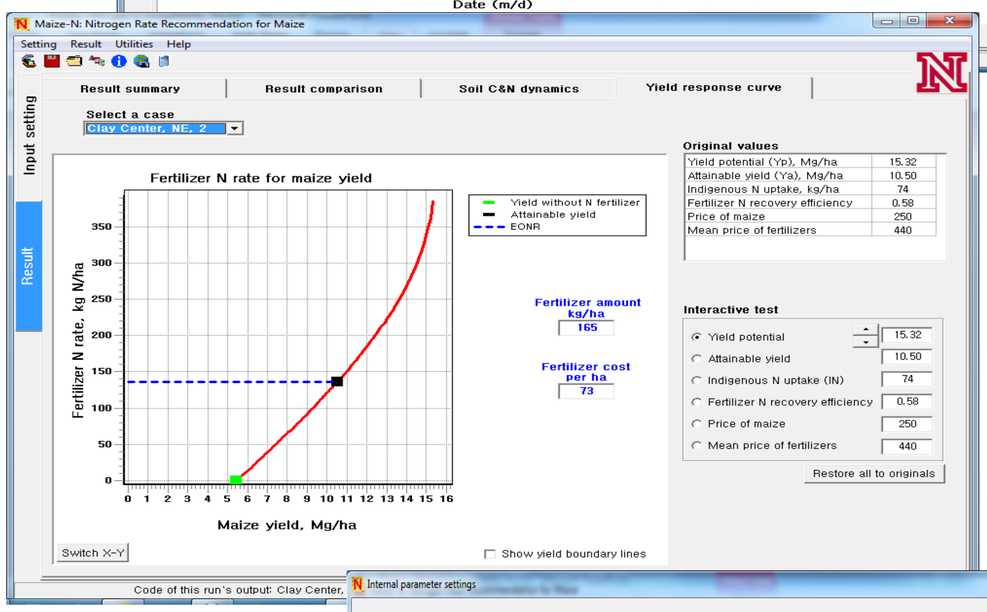
N rate determination process

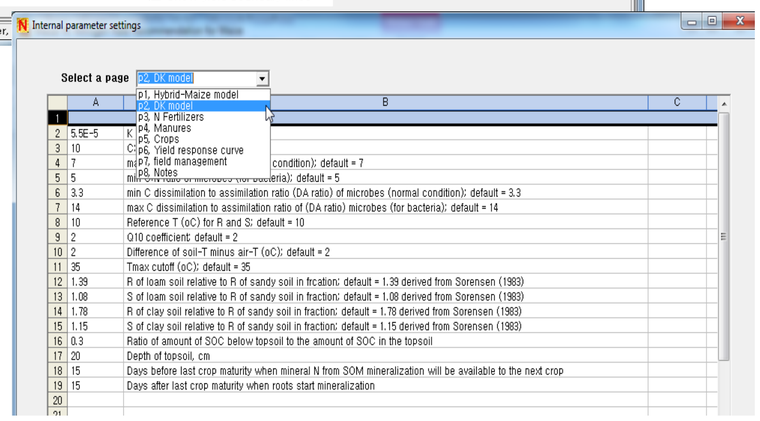


Comprehensive outputs









Transparent & modifiable internal parameters

Ref: Setiyono, TD; Yang,HS; Walters, DT; Dobermann, A; Ferguson, RB; Roberts, DF; Lyon, DJ; Clay, DE; Cassman, KG, 2011. Maize-N: A Decision Tool for Nitrogen Management in Maize. Field Crops Research, 103, 1-8.

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